CLAIMS

We claim:

1. A method for encoding input data comprising the steps of:

generating transformed signals in response to the input data, wherein the transformed signals are generated using a reversible wavelet transform; and

compressing the transformed signals into data representing a losslessly compressed version of the input data.

2. The method defined in Claim 1 wherein the transformed signals comprises a plurality of coefficients.

3. The method defined in Claim 1 wherein the step of generating comprises decomposing the input data using at least one non-minimal length reversible filter to produce a series of coefficients.

4. The method defined in Claim 3 wherein said at least one non-minimal length reversible filter comprises a plurality of one-dimensional filters.

5. The method defined in Claim 1 wherein the input data comprises image data.

6. The method defined in Claim 1 wherein the step of compressing comprises embedded coding the transformed signals, including the steps of ordering the series of coefficients and performing bit significance embedding on the transformed signals.

7. The method defined in Claim 1 further comprising the steps of:

decompressing the losslessly compressed version of the input data into transformed signals; and

generating the input data from the transformed signals into a reconstructed version of the input data using an inverse reversible wavelet transform.

8. A method for decoding data into original data comprising the steps of:

decompressing a losslessly compressed version of input data into a plurality of transformed signals; and

generating a reconstructed version of original data from the plurality of transformed signals using an inverse reversible wavelet transform.

9. The method defined in Claim 8 wherein the transformed signals comprises a plurality of coefficients.

10. The method defined in Claim 8 wherein the step of generating comprises decomposing the input data using at least one non-minimal length reversible filter to produce a series of coefficients.

11. The method defined in Claim 10 wherein said at least one non-minimal length reversible filter comprises a plurality of one-dimensional filters.

12. A method for encoding input data comprising the steps of:

generating a first plurality of transformed signals in response to the input data, wherein the transformed signals are generated using a reversible wavelet transform;

compressing the first plurality of transformed signals into data representing a losslessly compressed version of the input data;

decompressing the losslessly compressed version of the input data into a second plurality of transformed signals; and

generating the input data from the second plurality of transformed signals into a reconstructed version of the input data using an inverse reversible wavelet transform.

13. A method for encoding input data comprising the steps of:

transform coding the input data into a series of coefficients; and

embedded coding the series of coefficients, including the steps of ordering the series of coefficients and performing bit significance embedding on the series of coefficients, wherein a first type of embedded

coding is performed on a first portion of the data and a second type of embedded coding is performed on a second portion of the data.

14. The method defined in Claim 13 wherein the step of transform coding comprises wavelet filtering the input data.

15. The method defined in Claim 13 wherein the first type of embedded coding comprises tree coding.

16. The method defined in Claim 13 wherein the step of embedded coding comprises formatting the series of coefficients into sign-magnitude format.

17. A method for encoding input data comprising the steps of:

transforming input data into a series of coefficients using reversible wavelets;

converting the series of coefficients into sign-magnitude format into a series of formatted coefficients;

coding a first portion of the series of formatted coefficients using a first type of embedded coding to produce a first bit stream; and

coding a second portion of the series of formatted coefficients using a second type of embedded coding to produce a second bit stream, wherein the first bit stream and second bit stream are combined into a single bit stream.

18. The method defined in Claim 15 further comprising entropy coding the single bit stream.

19. The method defined in Claim 17 wherein the first type of coding comprises tree order coding.

20. The method defined in Claim 17 wherein the first portion comprises the high order bits and the second portion comprises the lower order bits.

21. The method defined in Claim 17 wherein the single bit stream represents a losslessly compressed version of the input data.